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Title: Los Alamos National Laboratory and Lawrence Livermore National Laboratory Plutonium Sustainment Monthly Program Report October 2012

Author(s): Robertson, William G.
Storey, Bradford G.
McLaughlin, Anastasia Dawn
Bowidowicz, Martin
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Intended for: Report

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LANL Executive Summary

In October of 2012 the Plutonium Sustainment program at LANL completed or addressed the following high-level activities:

1) Completed Pollux shipment to DAF in early October in accordance with the Gemini Core Team's schedule. Unpacked Pollux at DAF and supported Gemini team in various tests and inspections. Pollux test and measurement results were all acceptable. Pollux is expected to go to U1A in November. Pu Sustainment no longer has any obligations associated with the Gemini experiment.
2) Presented to Dr. Cook on the successful assembly of the Pollux experimental device as part of the Gemini series.
3) Supported the release of the FY13 Pu Sustainment Program Implementation Plan.
4) Established the FY12 program baseline and allocated funds accordingly.
5) Meetings
    a. Hosted the Pu Sustainment 4th Quarter Program Review
    b. Hosted the Power Supply PRT
    c. Traveled to KCP for the W87 Pit IPT

All four MRT L2 Milestones (4622-4625) associated with Plutonium Sustainment are on track for success in FY13.

The earned value metrics overall for LANL are within acceptable thresholds, so no high-level recovery plan is required.

Each of the four major LANL WBS elements is discussed in detail below with two sections at the end that are provided by KCP and LLNL.

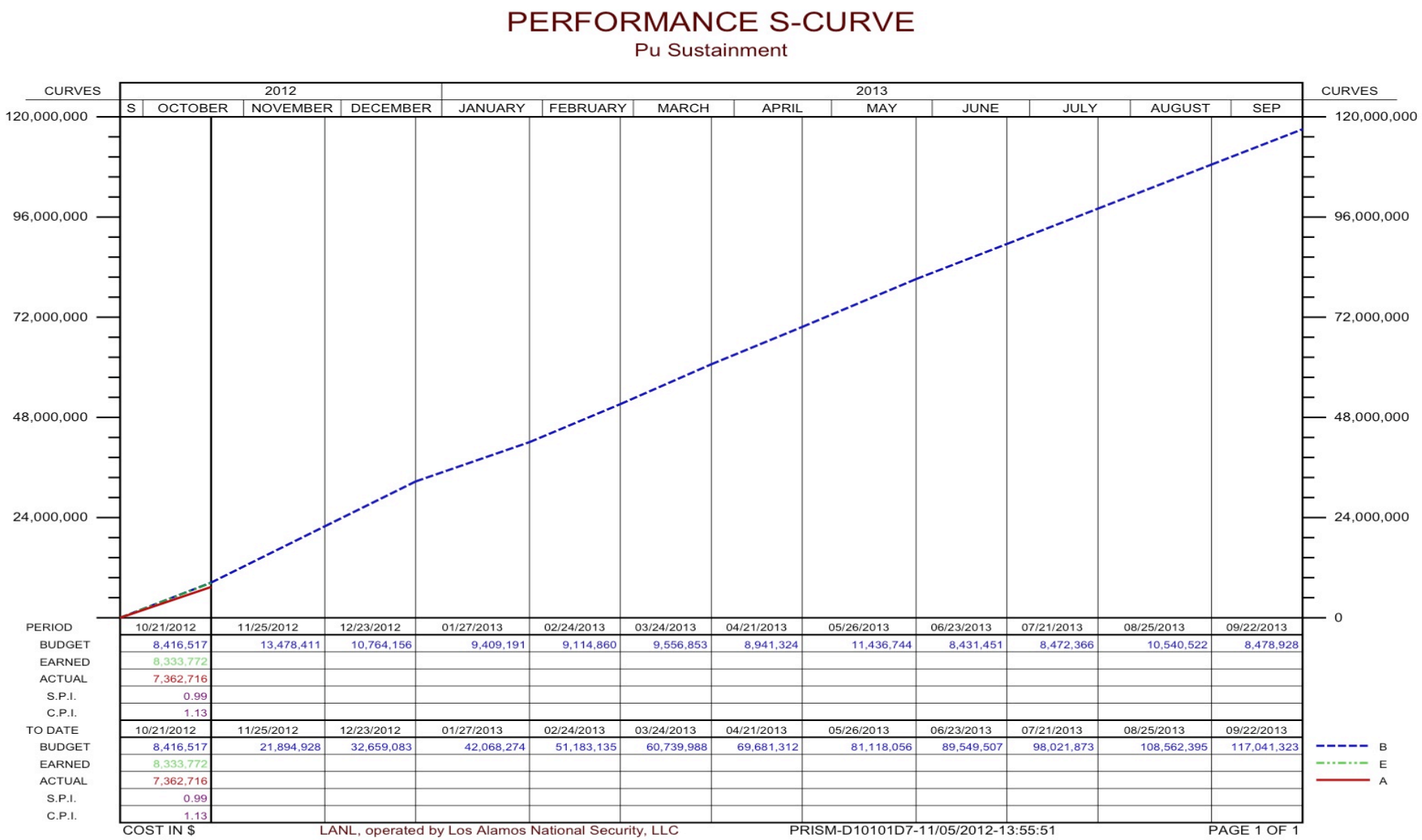
Table 1: October Baseline Change Requests

WBS	BCR #	BCR Description	Date Assigned	Date Approved	Impact	Cost Impact	Change Level
Power Supply	PSM-12-058	Conduct MSA	9/17/12	Working	Cost/Scope	$94k	3
Pu Sustainment	PSM-13-001	Establish FY13 Baseline	10/1/12	N/A	N/A	N/A	N/A
Power Supply	PSM-13-002	Temporary Lights, Concrete Samples and Door Modifications	10/1/12	10/1/12	Cost/Schedule	$24k	3
Power Supply	PSM-13-003	Panel Board & AC Unit curb	10/1/12	10/18/12	Cost/Schedule	$79k	3
Power Supply	PSM-13-005	Rate Adjustment	10/15/12	10/22/12	Cost/Schedule	TBD	3

A note about cost variances:

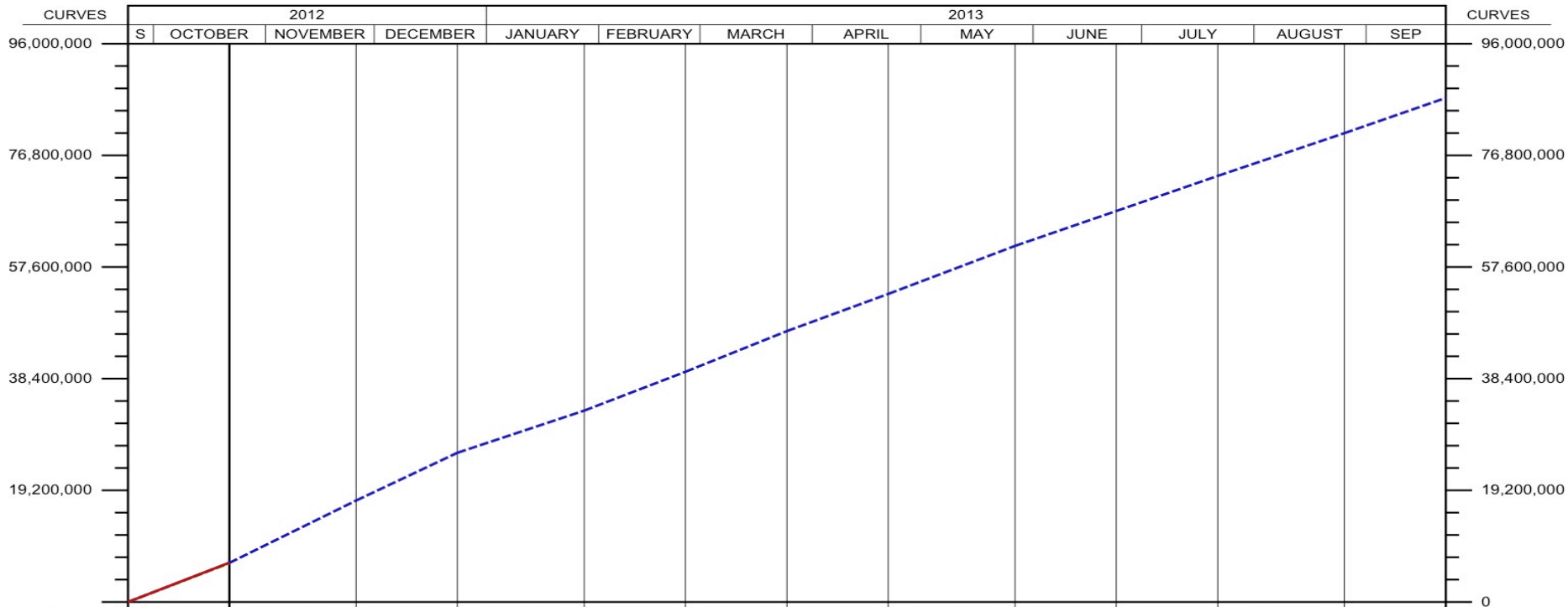
Historically, earned value and cost variance reporting has not been done in October. Providing these reports in the first month of the fiscal year has revealed two accounting system flaws. Firstly, “Level Of Effort” activities are planned and earned from the start of October and do not include the first week of the fiscal year (the week of September 24). So a 4-week LOE activity has 3 weeks of planned and earned value but 4 weeks of costs giving those activities a cost variance of -33% (CPI = 0.75). The second is that cost corrections do not happen retroactively but are reconciled in the month that the correction occurred. For example, an incorrect charge in October corrected the following month will show as a negative cost in November. These two factors have a large relative impact in early months and have resulted in a -15% cost variance in pit development (CPI = 0.87). When the cost corrections and LOE anomaly are factored out, the variance is +5% (CPI = 1.06). These problems have little impact on schedule variance reporting.

Earned Value Metrics



PERFORMANCE S-CURVE

Pu Sustainment W/O Facility Infrastructure



PERIOD	10/21/2012	11/25/2012	12/23/2012	01/27/2013	02/24/2013	03/24/2013	04/21/2013	05/26/2013	06/23/2013	07/21/2013	08/25/2013	09/22/2013
BUDGET	6,718,998	10,721,720	8,211,755	7,239,651	6,690,080	7,004,453	6,388,924	8,246,244	6,006,671	6,047,586	7,350,021	6,054,148
EARNED	6,624,007											
ACTUAL	6,754,462											
S.P.I.	0.99											
C.P.I.	0.98											
TO DATE	10/21/2012	11/25/2012	12/23/2012	01/27/2013	02/24/2013	03/24/2013	04/21/2013	05/26/2013	06/23/2013	07/21/2013	08/25/2013	09/22/2013
BUDGET	6,718,998	17,440,718	25,652,473	32,892,124	39,582,204	46,586,657	52,975,581	61,221,825	67,228,496	73,276,082	80,626,103	86,680,251
EARNED	6,624,007											
ACTUAL	6,754,462											
S.P.I.	0.99											
C.P.I.	0.98											

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COST IN $ LANL, operated by Los Alamos National Security, LLC PRISM-D10101D7-1-11/06/2012-12:21:39 PAGE 1 OF 1

1.0 LANL - Pit Development

MRT 4622	GREEN	*Perform Activities to Sustain Base Pit Material Processing and Fabrication Capability*

1. Continue W87 legacy pit IPT activities.
2. Maintain pit manufacturing capability by producing 4 pit-like builds and/or exercising the pit fabrication flow sheet.
3. Continue to make progress on the Electro-Refining line, Plutonium Foundry, and Laser Beam welder projects.

Builds		Baseline Date	Status/Comments	Completion Date	RGYB
Built Attempt #1	Start	October 29, 2012	Drill and press tube completed	October 31, 2012	BLUE
	Complete	February 19, 2013			GREEN
Built Attempt #2	Start	December 20, 2012			GREEN
	Complete	March 28, 2013			GREEN
Built Attempt #3	Start	April 1, 2013			GREEN
	Complete	July 3, 2013			GREEN
Built Attempt #4	Start	June 3, 2013			GREEN
	Complete	September 5, 2013			GREEN
Equipment					
ER Line Start Construction		November 1, 2012		October 17, 2012	BLUE
ER Electrical/Mechanical Complete for Gloveboxes I, II, III, & IV		March 13, 2013			GREEN
Complete Phase III Foundry Cold Testing		March 21, 2013			GREEN
Complete Laser Welder system testing in the SM-66 cold laboratory		April 19, 2013			GREEN
ER Electrical/Mechanical Complete for Trunklines II, III, and IV		June 27, 2013			GREEN
Foundry DCP - Approved for Construction		June 30, 2013			GREEN
Complete Laser Welder Testing in the PF-4 “cold” glovebox		July 19, 2013			GREEN
ER Electrical/Mechanical Complete for MTS Conveyor, Dri-train, Trunklines I & V		July 26, 2013			GREEN
Foundry Cooling System Upgrade Integrated Work Document Complete		July 30, 2013			GREEN
Foundry Cooling System Upgrade Integrated Work Document Complete		July 30, 2013			GREEN
ER Electrical/Mechanical Complete for Braking Press, HPU, & Primary Staging Carousel		August 29, 2013			GREEN
Start construction of Foundry GB1		September 20, 2013			GREEN
ER Line Upgrades Complete		September 30, 2013			GREEN
Complete Laser Welder testing in the PF-4 “hot” Glovebox		September 30, 2013			GREEN

MRT 4623	GREEN	*Progress towards competency to build W87 pits by achieving W87 EDU by September 30, 2013*

1. Complete W87 legacy EDU build - jointly reviewed by W87 legacy pit IPT by September 30, 2013.

EDU Build	September 30, 2012	Build #1 is still viable for EDU		GREEN

1.1 Technical Progress

- Completed the drill and press operation successfully on the first W87 build. Welding is schedule for early November.
- Completed producing three of three planned ER rings.
- Completed ahead of schedule all four aliquot castings **planned for first quarter**.
- Completed one shape casting as planned.
- Started BCR planning for Sheffield to take data in FY13. Due 12/21/12

1.2 Equipment

- The plan to meet the grading criterion #3 for L2 milestone MRT 4622 includes the following:
  1. The Laser Welder Upgrade - complete all planned laser welding system upgrades and release both the "cold" and "hot" glovebox for welding operations by September 30, 2013.
  2. The Plutonium Foundry Upgrades - complete cold testing, issue an approved design for construction, and start construction on the first of three foundry gloveboxes by September 30, 2013.
  3. The Electro-Refining Upgrade - complete all mechanical and electrical construction activity associated with the eleven electro-refining boxes and systems by September 30, 2013.

- Laser Welder
  - Wiring of the switch and junction boxes continued
  - Design of the welding skid end panels was completed and is in procurement
  - Evaluated encoder replacement options for PF-4

- Electro-Refining Line Upgrade
  - Started equipment installation (construction) activities
  - Continued procurements from the consolidated bill of materials (CBOM) necessary for installation
  - The Laboratory Integrated Stewardship Council (LISC) approved the engineering support contract

- Foundry Upgrade
  - Continued assembly of the cold test foundry
  - Received Limited Volume Circulating Chilled Water system skid

1.3 Issues

- None

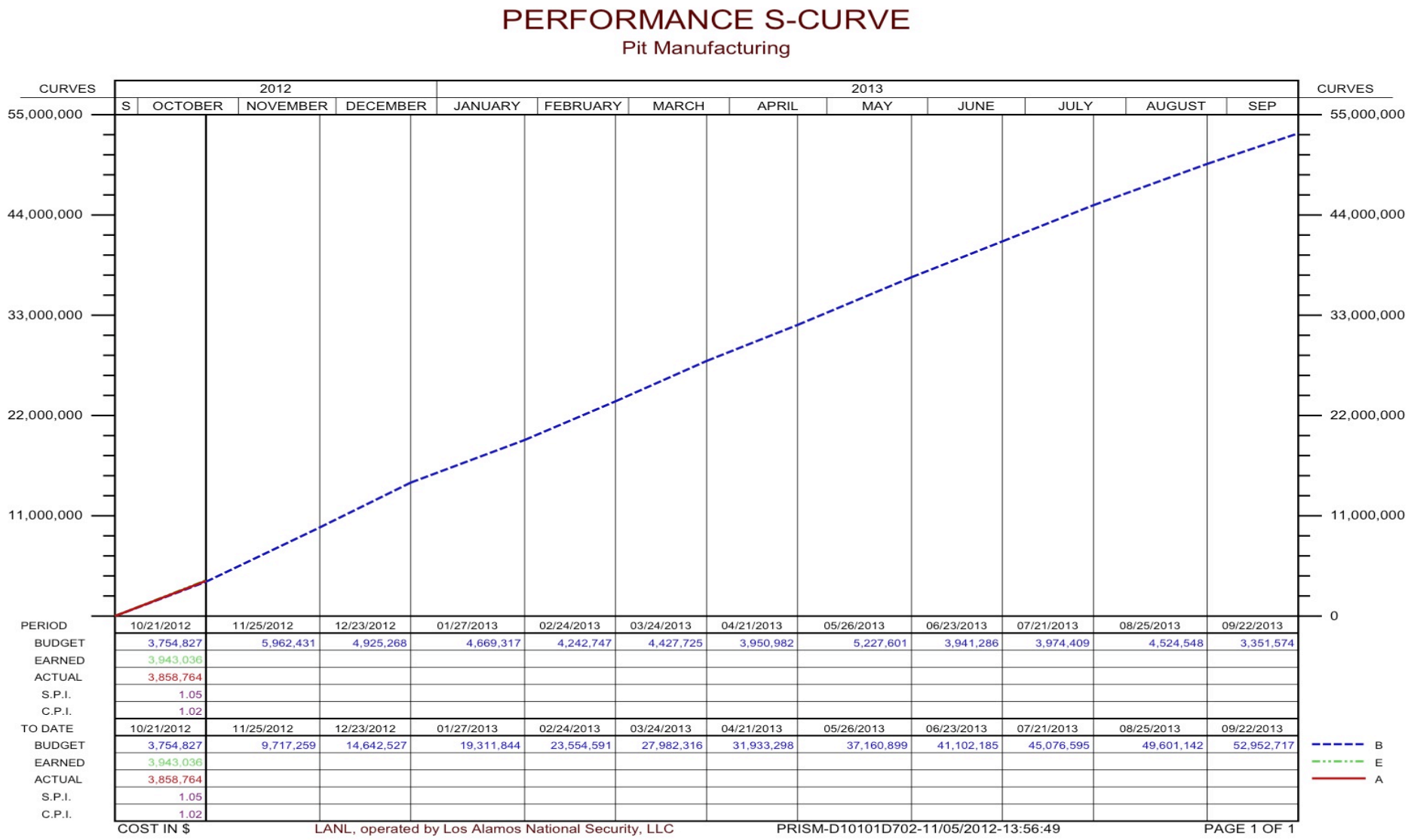
1.4 Variance Analysis and Recovery Plan

- None

1.5 BCRs

- None

1.6 Earned Value Metrics



2.0 LANL - Power Supply

MRT 4624	GREEN	*Install the RTG PSAA equipment and upgrades*

1. Complete construction of the PSAA by September 30, 2013
2. Turnover PSAA facility to Operations by September 30, 2013

L3/L4 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
Ductbank Installation Complete	October 12, 2012	Asphalt installation tied to milestone.	October 18, 2012	BLUE
Process Equipment Ready for Delivery to PF-5 Basement	November 19, 2012			GREEN
HVAC Installation Complete	November 21, 2012			GREEN
Installation of Process Equipment Complete	December 13, 2012			GREEN
Construction Complete	February 19, 2013			GREEN
Release to Operations	June 3, 2013			GREEN

MRT 4625	GREEN	*Complete FY 2013 RTG material recovery activities*

1. Dismantle 95% of the Pantex items received by June 30, 2013 (up to 450 items)
2. Recover and store the oxide by September 30, 2013.

L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
Fuel Recovered & Stored – July 2012 Shipment	October 16, 2012		September 12, 2012	BLUE
Fuel Recovered & Stored – August 2012 Shipment	November 8, 2012			GREEN
Fuel Recovered & Stored – November 2012 Shipment	February 6, 2013			GREEN
Fuel Recovered & Stored – January 2013 Shipment	April 17, 2013			GREEN
Fuel Recovered & Stored – March 2013 Shipment	June 11, 2013			GREEN
Fuel Recovered & Stored – May 2013 Shipment	August 13, 2013			GREEN
Fuel Recovered & Stored – June 2013 Shipment	September 3, 2013			GREEN

2.1 Technical Progress

- Material Recovery
  - Received FY13 Shipment #1 and #2 (received in July and August, respectively).
    - All units from both shipments are dismantled.
    - Completed fuel recovery and storage of Shipment #1 in FSOs.
    - Completed fuel recovery and storage of Shipment #2 in FSIs. FSO welding delayed due to equipment failure. FSO welding is scheduled to resume in early November.
  - Received FY13 Shipment #3 on October 22, 2012.
- RTG Process Development
  - The PRT met October 17-18, 2012, at LANL. Tours of PF-5 and SM39 were made. The topics discussed included availability of the Ta-10W bar and the acceptance of the material, a QA update, an Analytical Chemistry update, an E-Tester update, a schedule review, a materials and welding presentation from MST-6, a Design of Experiments discussion, a review of the Marlow component, and preparation for the November 13, 2012 Conceptual Design Review at SNL.

- Preparing for updates of the LANL and KCP Production Strategies.
- Continuing weld studies. SNL brought a 4-foot Ta-10W bar for our use in preparing parts. The bar was sent to the manufacture for UT and Dye Penetration analysis.

2.2 Equipment

- Power Supply Assembly Area (PSAA)
  - Construction continues and is on track.
  - Completed a walk-down with the masons on core drilling for pipe pass through, exhaust head openings, and filling in the old exhaust fan openings.
  - Completed placing asphalt along Beta Drive.
  - Completed GPR for anchoring and fan installation.
  - Completed installation of jib crane.
  - Completed installation of exterior equipment platform steel.
  - Continued installation of electrical raceway and service conductors.
  - Continued layout of the vacuum exhaust header in the shock tower area.
  - Continued installing the ventilation exhaust header.
  - Continued painting beams and columns of equipment platform steel.
  - Continued installing the building hot supply and return to the VAV boxes.
  - Continued to insulate the building piping and fire stop the penetration in fire rated walls.
  - Started installation of handrails for the equipment canopy.
  - Started backfill and compaction around the transformer pad.
  - Started installation of electrical panels PP-2 and PP-B.
- The Low Voltage Electron Beam (LVEB) Welder
  - Completed vendor setup and LANL SME training.
  - Continued preparation for LANL MSA.
- Analytical Chemistry glove boxes (Pu Assay and Radiochemistry)
  - Completed Radiochemistry box connection to drop box.
  - Completed installing Radiochemistry box on GB legs.
  - Prepared the Zone 2 ductwork for installation.
  - Continued mechanical bulk installations.
  - Completed LISC approval for Merrick Title III effort.
- SM-39 Development Laboratory
  - Continued electricity installation for process equipment.

2.3 Issues

- None

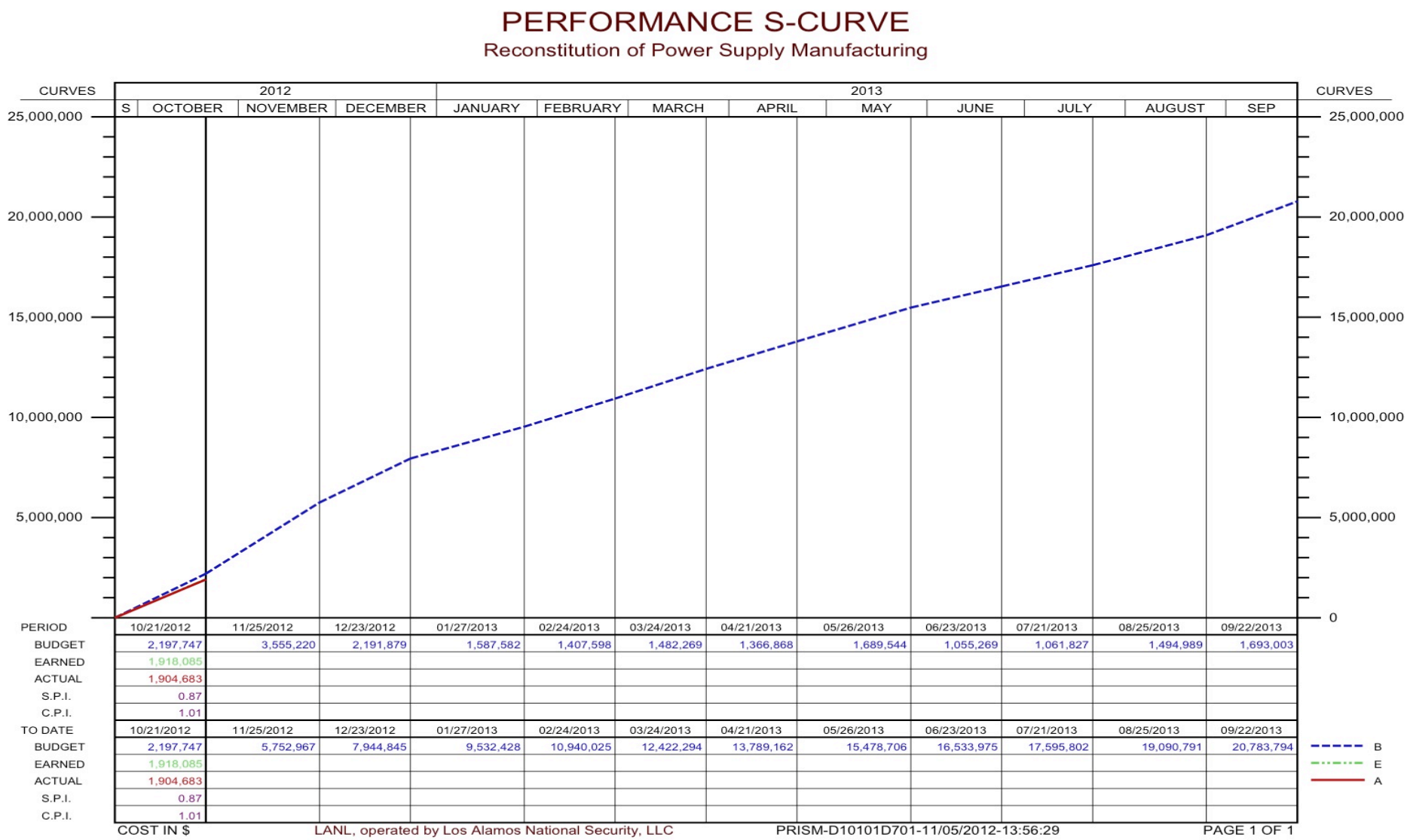
2.4 Variance Analysis and Recovery Plan

- SPI - Progress deviated from planning basis due to equipment failure of the welding glovebox's oxygen analyzer and the Hytec radiography system, which have delayed FSO welding. Overall, the milestone remains on track, despite the variance.
- Recovery Plan – Procurement of necessary parts for repair of equipment has been expedited. FSO welding is scheduled to be completed by the middle of November.

2.5 BCRs

- None

2.6 Earned Value Metrics



3.0 Program Management and Support

3.1 Program Management

- Completed and released FY13 baseline schedule, work packages, and allocation 0.1.
- Earned value and actual cost reporting are being tracking in October.

3.2 Support

- Progress on support functions will be reported beginning in November.

3.3 Issues

- None

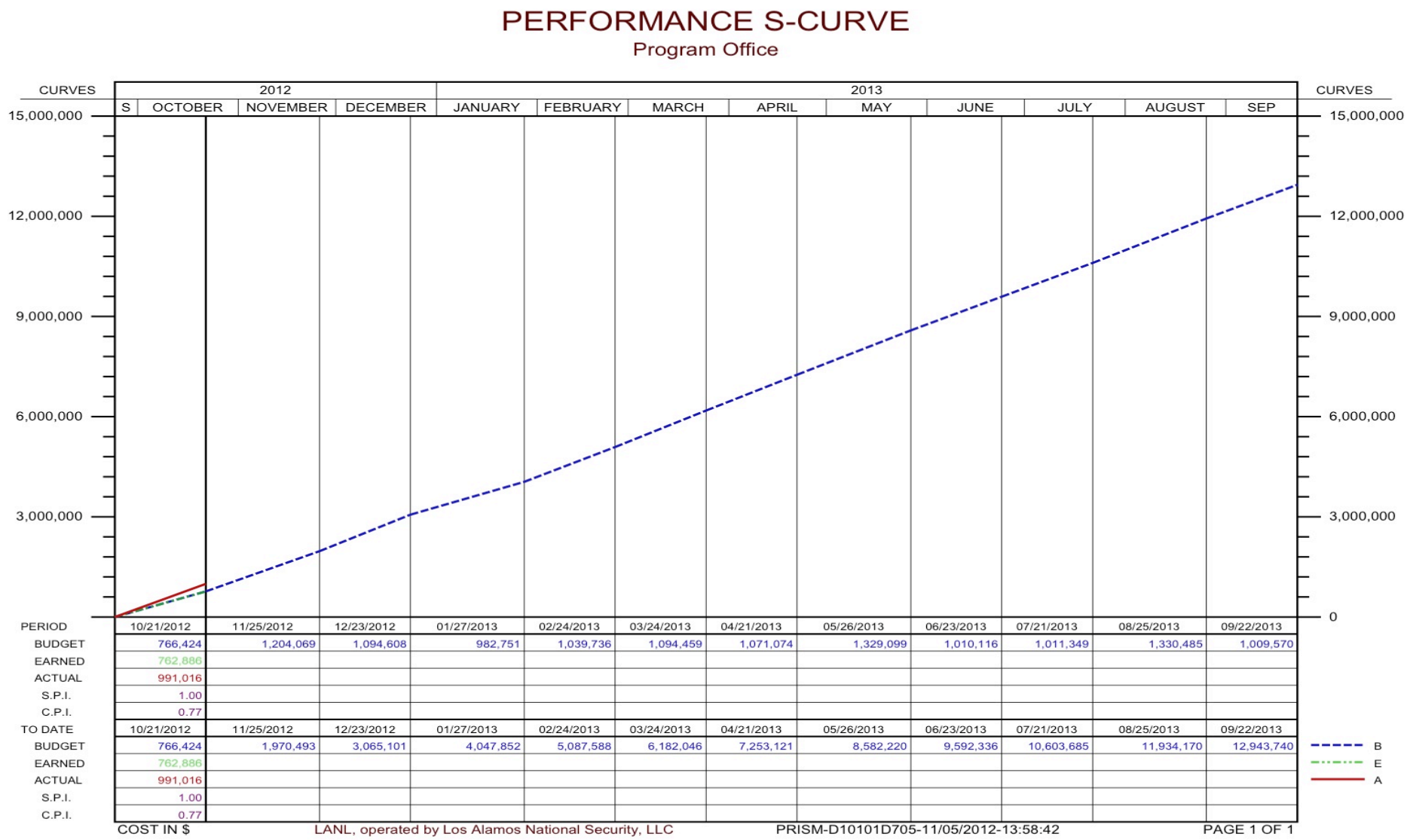
3.4 Variance Analysis and Recovery Plan

- Cost variance is an artifact of the LOE accounting flaw (see executive summary). The impact of this accounting flaw will be diluted with each month but not fully reconciled until the end of FY13.

3.5 BCRs

- None

3.6 Earned Value Metrics



4.0 Facilities, Waste and Institutional Support

4.1 Technical Progress

- PF-4 Facility Availability: October N/A%
  - 100 Area: N/A%
  - 200 Area: N/A%
  - 300 Area: N/A%
  - 400 Area: N/A%

4.2 Equipment

- N/A

4.3 Issues

- N/A

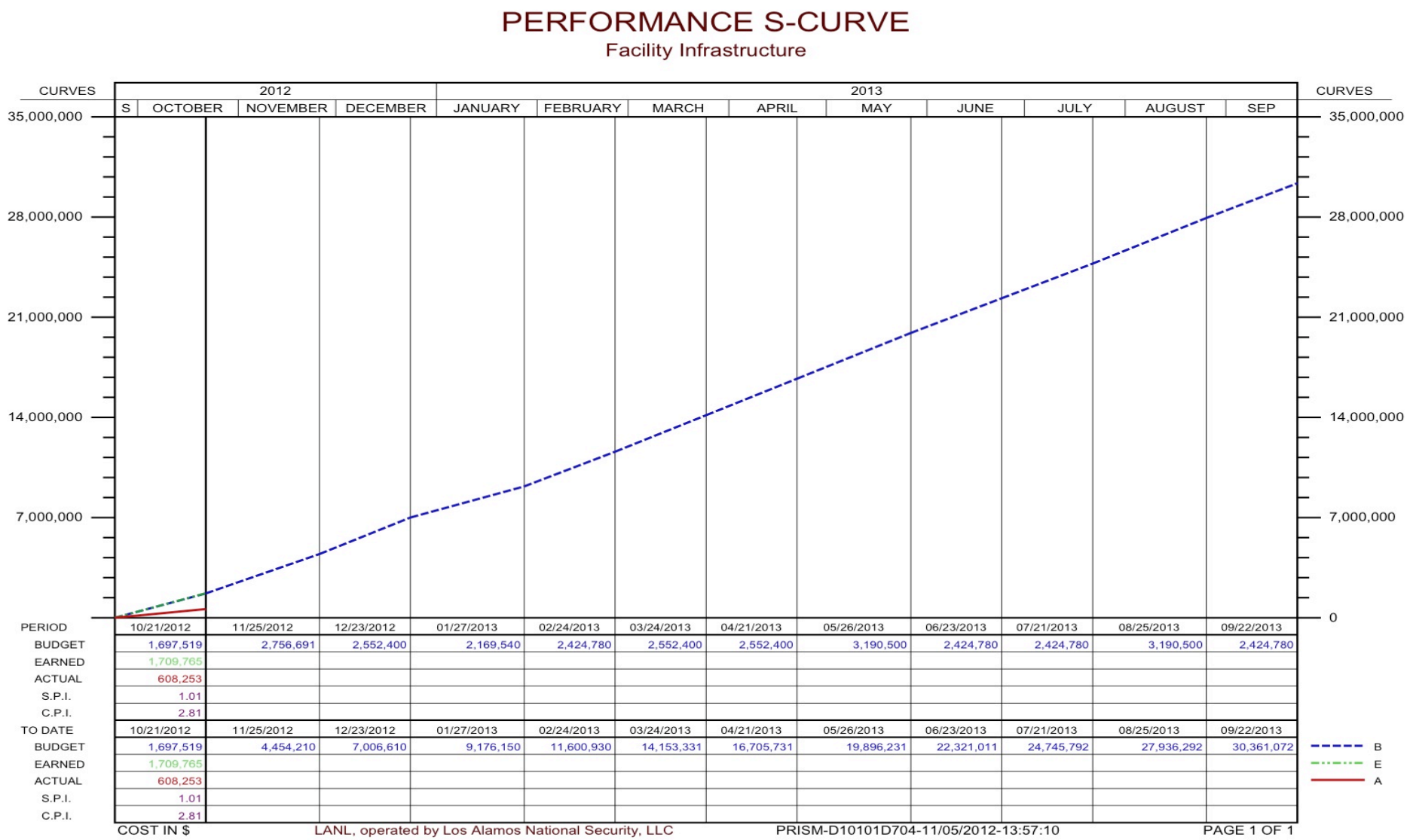
4.4 Variance Analysis and Recovery Plan

- Note that the actual costs are well below the planned costs. This is an artifact of the monthly billing by RTBF. The costs came in after the financial end of the month. There is no concern at this time nor is there an expectation that this will under run and provide budget for other scope.

4.5 BCRs

- N/A

4.6 Earned Value Metrics



5.0 KCP

	GREEN	*Begin Development of Non-Nuclear Component Manufacturing capability*

1. Purchase and install new precision lathes by 9/13
2. Procure development material by 7/13
3. Start fabrication of one of three development shell sets by 8/13

L2 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
Purchase and install new precision lathes	9/30/2013	2 ea. vendor visits complete. Pending receipt of response to RFQs		GREEN
Procure development material	7/31/13	Material Specification review		GREEN
Start fabrication of one of three development shell sets	8/31/2012	4th quarter FY13		GREEN

5.1 Technical Progress

- Input submitted to NNSA for PEP and Level II Milestones
- Engineering/program management team assembled
- ITP meeting held on Oct 10
  - Teaming – LANL/KCP/LLNL interfaces established
  - Initial material standards review
- Team sent to vendors as part of precision lathe purchase process
- Activity related to equipment placement at Botts Rd. I/W
- Meetings set up with LANL/LLNL to discuss material specifications

5.2 Equipment

- Two vendors have been visited – requests for quotes initiated – Pending final response

5.3 Issues

- None

5.4 Variance Analysis and Recovery Plan

- N/A

5.5 BCRs

- Work Authorization/Mission assignment received
  - BCR initiated establishing funding profile
- Project accounts set up and opened

5.6 Earned Value Metrics

- $4.1M-Full Funding
- $3.937M-Spend Plan
- $1,901,115-MA
- As of end of October = $47,156 Actuals

Graphical report will be initiated in November

6.0 LLNL

MRT 4749	GREEN	*Perform Activities to Sustain Base Pit Material Processing and Fabrication Capability*

1. Continue to support and lead the W87 legacy pit IPT as the DA
2. In coordination with LANL PA, maintain Sheffield measuring device for process qualification
3. Document and provide design for W87-like build no later than December 31st, 2012
4. In conjunction with LANL PA, complete W87-like build
5. Receive and process special items

L2/L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
Support completion of W87 EDU build	9/30/2013			GREEN
Update W87 metal specification	7/30/2013			GREEN
Complete weld certification tests	3/31/2013			GREEN
Initiate readiness review for compatibility tests	9/30/2013			GREEN
Receive shipment from SRS and begin processing	1/1/2013	Shipment received		GREEN
Complete processing first set of special items from SRS and/or receive shipment of special items from NNSS	9/30/2013			GREEN
Complete initial demonstration of purification and recovery of desired materials	6/30/2013			GREEN
Document and provide design for W87-like	12/31/2012	Design updated and initial DA review completed		GREEN
In conjunction with LANL PA, complete W87-like build	9/30/2013			GREEN

6.1 Technical Progress

- The pit production IPT met at Kansas City Plant on October 10th. The discussion primarily focused on preliminary KCP plans for the non-nuclear Mission and on answering KCP questions regarding design definition. Since the IPT meeting, the IPT DA has focused on reviewing design definition change requests and updating/adding drawings to reflect the new mission assignment.
- Received the shipment of Special items from SRS
- Developed new Special Item Process using last Special Item the LLNL inventory
- Received MD-2 Trainer to develop procedures and certification of LLNL personnel (the shipping container for the NNSS shipments)

6.2 Equipment

- None

6.3 Issues

- None

6.4 Variance Analysis and Recovery Plan

- None

6.5 BCRs

- None

6.6 Earned Value Metrics

- $6,980k planned FY13
- $743k planned in October
- $780k actual
- 11% complete

Graphical report will be initiated in November